HOW EDUCATION INFLUENCES HEALTH IN TENNESSEE

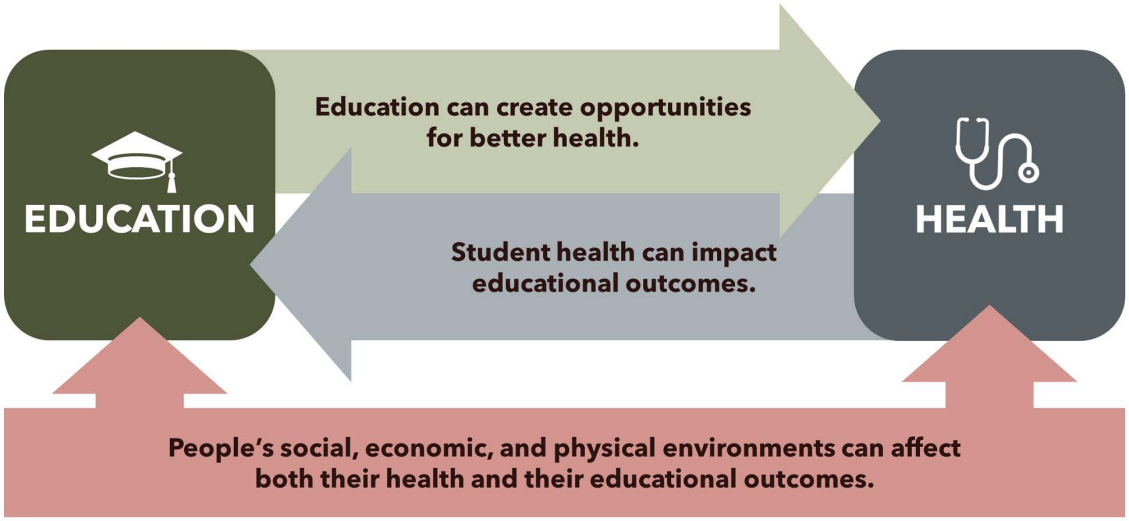
THE SYCAMORE INSTITUTE

KEY TAKEAWAYS

- Health and education are mutually influential. Education can create opportunities for better health, and an individual's health can influence their educational achievement and outcomes.
- Higher levels of education correlate with better health outcomes for individuals, communities, and whole populations.
- Both health and education policy may benefit from discussions that consider their close and complex connections.

This report explores one side of the education-health relationship: how education influences health. (**Figure 1**) Specifically, the report looks at education and opportunities for better health, the role of early childhood experiences, Tennessee data on education and health, and the public policy implications of the education-health relationship.

FIGURE 1. THE RELATIONSHIP BETWEEN EDUCATION AND HEALTH



Source: Adapted from Virginia Commonwealth University. (1)

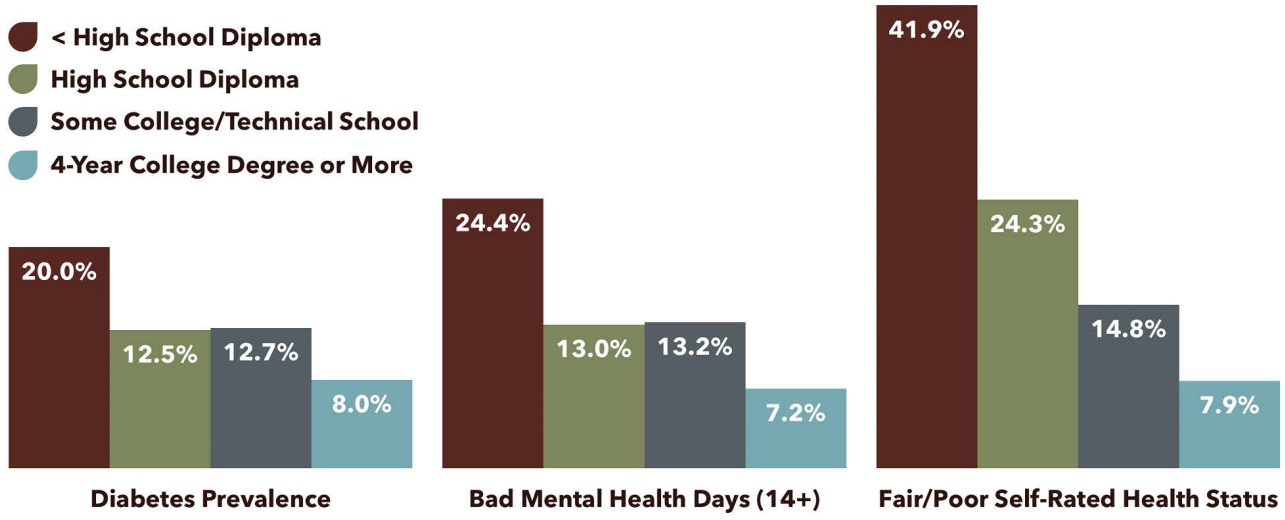
EDUCATION AND HEALTH OUTCOMES

People with more education tend to have better health outcomes. At age 25, American adults with a bachelor's degree can expect to live 9 years longer than those without a high school education — a gap that has widened over time. (2) (3) In general, mortality rates and health outcomes continue to improve with each additional year of schooling. (4) (5) (6) (7)

EDUCATION AND HEALTH OUTCOMES IN TENNESSEE

Data show clear connections between Tennesseans' educational attainment and health outcomes. For example, Tennesseans with a college degree have lower diabetes rates, fewer self-reported poor mental health days, and better self-rated health statuses than other residents. (**Figure 2**)

FIGURE 2. EDUCATION AND SELECT HEALTH OUTCOMES IN TENNESSEE (2016)



Source: The Sycamore Institute's analysis of the 2016 Behavioral Risk Factor Surveillance System (18)

EDUCATION AND OPPORTUNITIES FOR BETTER HEALTH

Access to education and educational attainment are closely linked with the factors that influence health. For example, individuals with more education are more likely to have jobs, higher incomes, and health insurance and engage in more health-promoting behaviors. (10) (7)

Education can increase access to the economic resources and supportive social networks and environments that create opportunities for individuals to improve their health. (9) For instance, individuals with more education are more likely to live in neighborhoods with access to healthy foods, opportunities for physical activity, lower crime rates, access to health care providers, lower levels of environmental toxins, and high quality education. (1) (9)

The relationships between these factors interconnect in complex and often cyclical ways. For example, residents of lower-income neighborhoods tend to have fewer opportunities for good health and quality education. (9) The lack of a quality education can in turn reduce a person's access to opportunities and resources to improve their health and education, as well as that of their children.

THE ROLE OF ADVERSE CHILDHOOD EXPERIENCES

Experiences early in life that cause severe, chronic stress can have lifelong negative effects on education and health outcomes. People who face these adverse childhood experiences (ACEs), such as exposure to household dysfunction or psychological, physical, or sexual abuse, are less likely to attain higher levels of education.(12) The more ACEs individuals face, the less likely they are to have resources or develop characteristics that help them maintain good health and cope with stress in healthy ways — including social supports, high self-esteem, and a sense of impulse control. (9) (13) (14)

Early childhood and adolescence are critical times for human brain development. Exposure to ACE-related toxic stress (e.g. interpersonal conflict, housing issues, food insecurity, unsafe neighborhoods, and environmental toxins) disrupts this brain development. Due to the effects on the brain, this exposure increases the risk for many behaviors and coping mechanisms that have long-term negative effects, such as alcohol abuse, drug abuse, and smoking. ACEs science shows that as exposure to childhood toxic stress increases, so does the risk for:

- Being less engaged in school (14)
- Repeating a grade (15)
- Poorer cognitive development (16)
- Poorer mental and physical health (17)
- Premature death (17)

While exposure to chronic stress increases the risk, negative health and educational outcomes are not inevitable. Building resilience, support for children and families at the individual and community level, and increasing awareness can prevent or mitigate ACEs and their effects. Opportunities for these interventions often occur in educational settings. (15) (17)

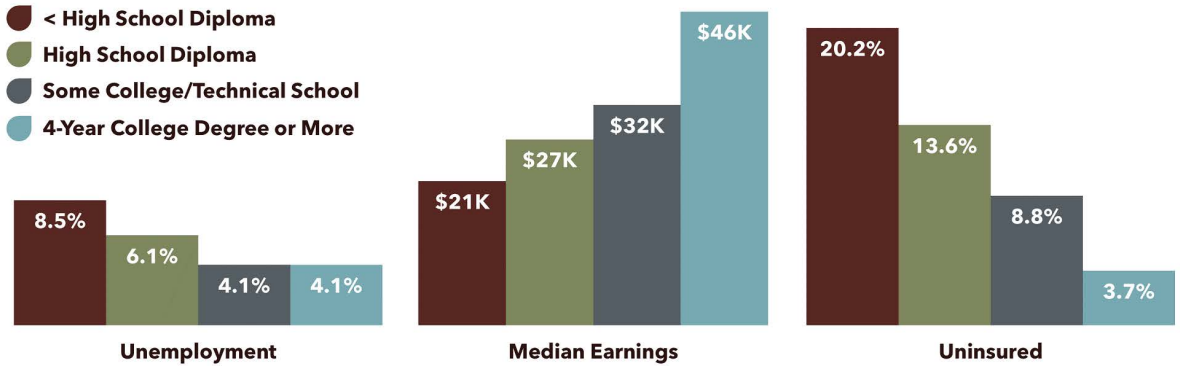
EDUCATION AND OPPORTUNITIES FOR BETTER HEALTH IN TENNESSEE

Tennesseans with different levels of education often have differences in the drivers of health – the environments, behaviors, and clinical care that affect our health and well-being. For example, Tennesseans:

- Without a high school diploma have higher rates of unemployment (8.5%) and lower incomes ($21,156) than college graduates (2.5% and $46,065). (**Figure 3**)
- Without a high school diploma have higher uninsured rates (20.2%) than college graduates (3.7%). (**Figure 3**)
- With lower levels of educational attainment have higher rates of smoking, are less physically active, and are more likely to skip needed medical care due to cost. (**Figure 4**)
- Without a high school diploma have the highest prevalence of 3 or more ACEs. (**Figure 4**)

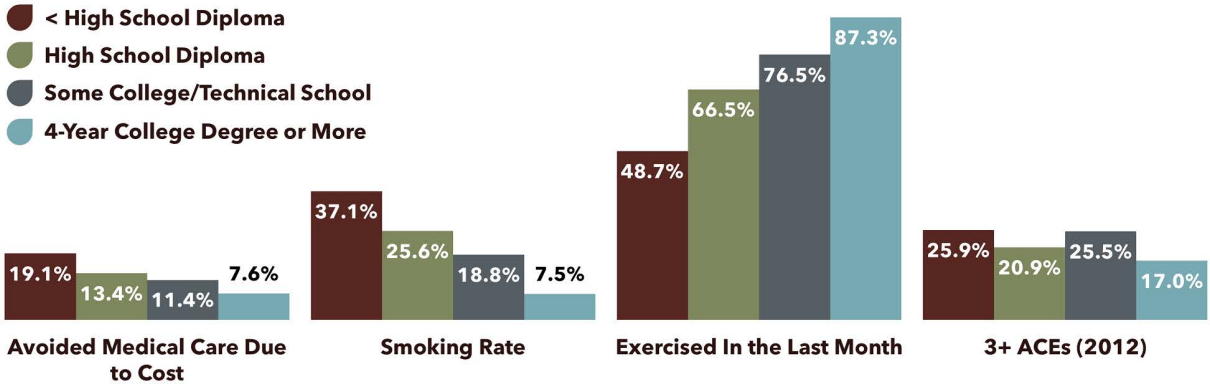
Tennessee counties with higher educational attainment are generally healthier than other counties. (29) As the education level of a county increases, premature mortality and the share of the population reporting poor or fair health decreases (**Figure 5**). (23)

FIGURE 3. EDUCATION, ECONOMIC CHARACTERISTICS, AND INSURANCE COVERAGE IN TENNESSEE (2016)



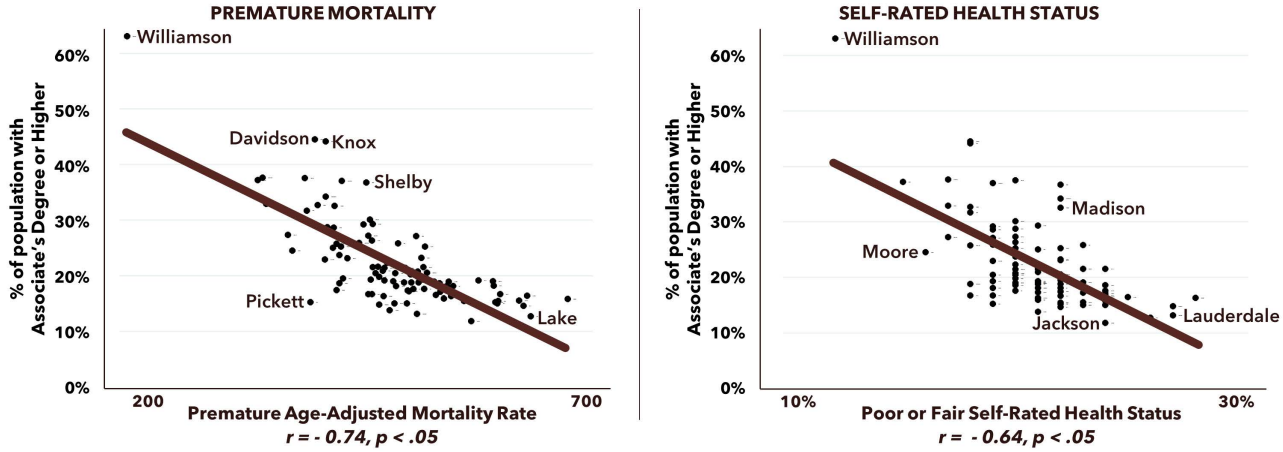
Source: 2016 American Community Survey 1-year estimates (19)

FIGURE 4. EDUCATION, HEALTH BEHAVIORS, AND ACEs IN TENNESSEE (2016)



Source: The Sycamore Institute's analysis of the 2012 and 2016 Behavioral Risk Factor Surveillance System (20) (18)

FIGURE 5. TENNESSEE COUNTIES BY EDUCATIONAL ATTAINMENT, PREMATURE MORTALITY, AND SELF-RATED HEALTH STATUS (2016)



Note: The dots represent the share of each county's population with at least an associate's degree versus the county's premature age-adjusted mortality rate (left) and the share of residents who rate their health status as poor or fair (right). The line predicts rates of educational attainment and premature mortality/health status based on the pattern of actual educational attainment and premature mortality/health status in Tennessee counties.
Source: The Sycamore Institute's analysis of data from the 2017 County Health Rankings (21) and the 2012-2016 American Community Survey 5-year estimates (22)

A NOTE ON EDUCATIONAL ATTAINMENT DATA

There are a number of ways to slice the data on educational attainment, which measures the highest level of education that an individual has achieved. This report analyzes data from 2 sources that report different categories of educational attainment: the U.S. Centers for Disease Control and Prevention's Behavioral Risk Factor Surveillance System (BRFSS) and the U.S. Census' American Community Survey (ACS).

The table below displays the educational attainment categories reported for each survey, which have important implications for data analyses. For example, neither survey asks specific questions about technical/vocational school certificates or degrees, which is one of the underlying metrics for Tennessee's "Drive to 55" initiative. Additionally, BRFSS is the only publicly available dataset that provides state-level information on both health and educational attainment. The data limitations of BRFSS, however, mean that we are unable to draw out any health-related differences (if any exist) between graduates of technical/vocational school or community college and graduates of a 4-year college.

EDUCATIONAL ATTAINMENT CATEGORIES BY DATA SOURCE

Behavioral Risk Factor Surveillance System (31)	**American Community Survey** (32)
• Never attended school or only kindergarten • Grades 1 through 8 (Elementary) • Grades 9 through 11 (Some high school) • Grades 12 or GED (High school graduate) • College 1 year to 3 years (Some college or technical school) • College 4 years or more (College graduate)	• No schooling completed • Nursery school • Grades 1-11 • 12 grade — no diploma • Regular high school diploma • GED or alternative credential • Some college credit, but less than 1 year of college • 1 or more years of college credit, no degree • Associate's degree • Bachelor's degree • Master's degree • Professional degree beyond bachelor's degree • Doctorate degree

The analyses in this report primarily use completion of a 4-year degree or more as the highest level of educational attainment. We chose this level over available alternatives because: (1) data are available on this group from both sources and (2) this group has distinctly better health outcomes than other groups for which health data are available (**Figure 2**).

CONSIDERING THE EDUCATION AND HEALTH RELATIONSHIP IN PUBLIC POLICY

Because of the mutually influential relationship between education and health, many public policies can affect both the educational and health outcomes of Tennesseans. (24) Policymakers interested in improving health and education in Tennessee may want to consider how their decisions affect:

- **The Complex Health-Education Relationship** — Health and education issues are typically discussed separately, yet they are closely connected. For example, physical activity policies in schools directly affect students' health status, academic achievement, and cognitive performance. (28) Recognizing these health impacts by taking a Health in All Policies approach, for example, can help foster collaboration between the health and education sectors.

- **Children's Health and Well-Being** — Childhood is an opportune time to influence both the education and health trajectory of Tennesseans. Evidence-based policies and programs that support children's

health and well-being and target children at increased risk of experiencing toxic stress can improve short- and long-term educational outcomes, health, and prosperity. (25) (26)

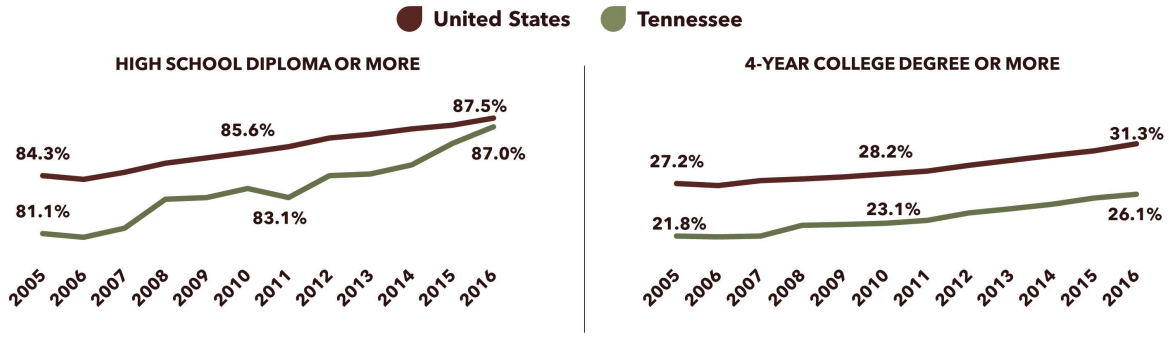
- **Access to Quality K-12 Education and Post-Secondary Readiness** — Many social and economic factors influence access to a quality education. For example, people with low incomes and students of color are more likely to attend schools with fewer instructional resources, lower-paid teachers, larger class sizes, and less school funding. (8) Differential access to quality education creates barriers to educational attainment and further complicates the relationship between education and health.

- **Access to Post-Secondary Education and Training** – Policies and programs that improve access to post-secondary education and training may also influence population health. Tennessee has taken steps to make higher education more affordable through Tennessee Reconnect, Tennessee Promise, and the Tennessee HOPE Scholarship. Factors like affordability and academic readiness may pose barriers to attending and completing post-secondary education, which could compromise related policies' effects on educational attainment and population health. (27)

EDUCATIONAL ATTAINMENT IN TENNESSEE

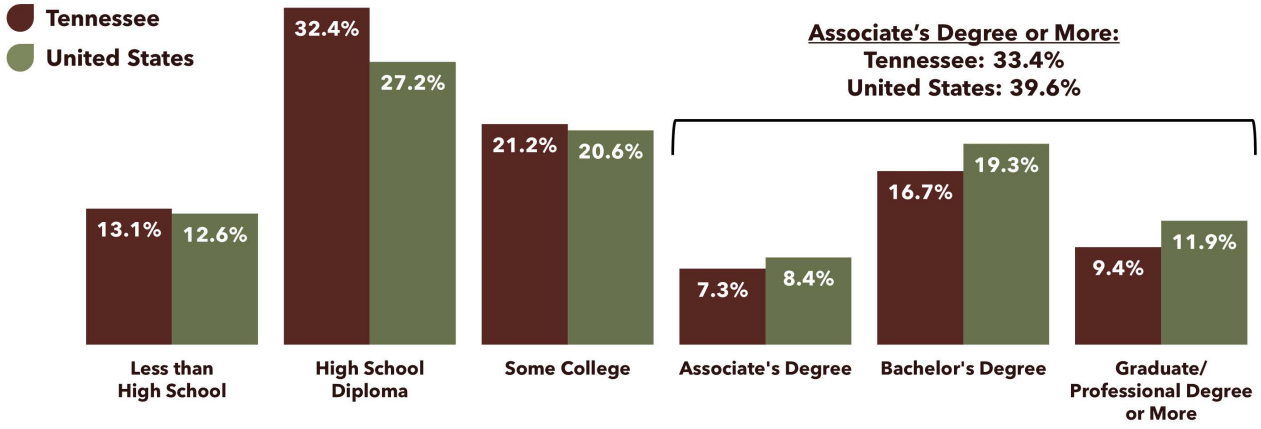
Tennesseans' educational attainment lags behind the U.S. average but has improved over time (**Figure 6**). The share of Tennesseans with at least an associate's degree (33.4%) and at least a bachelor's degree (26.1%) remains below the national averages (31.3% and 39.6%, respectively) (**Figure 7**). There is also significant geographic variation in educational attainment across the state (**Figure 8**).

FIGURE 6. EDUCATIONAL ATTAINMENT IN TENNESSEE vs. U.S. (2007-2016)



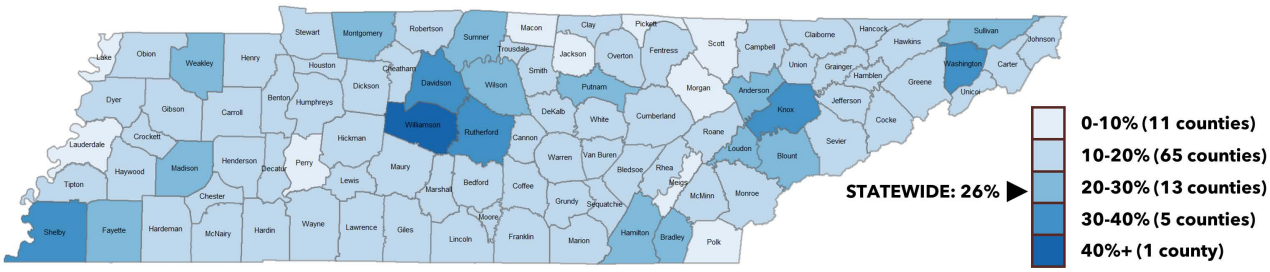
Note: Includes adults age 25+. Source: 2007-2016 American Community Survey 1-year estimates (30)

FIGURE 7. EDUCATIONAL ATTAINMENT IN TENNESSEE (2016)



Note: Includes adults age 25+. Source: 2016 American Community Survey 1-year estimates (19)

FIGURE 8. TENNESSEANS WITH A 4-YEAR COLLEGE DEGREE OR MORE (2012-2016)



Note: Includes adults age 25+. Source: 2012-2016 American Community Survey 5-year estimates (22)

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